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ABSTRACT

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CONSISTENCY BEHAVIOR and VALIDITY in Classroom Sociometrics

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ABSTRACT

This inquiry's objectives were to clarify the construct distinction between measures of peer rejection and (low) peer acceptance, obtained by classroom sociometrics; and to establish an index of children's sociometric consistency behavior at varying age levels.

A sociometric device was constructed and administered to obtain ratings on both peer acceptance and peer rejection by each child for his classmates. Sociometric consistency behavior was defined by a consistency matrix that was generated for each child, from which a consistency index was assigned him. Consistency behavior comparisons were made over grade levels.

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Consistency Behavior and Validity in Classroom Sociometrics

Edward E. Gotts, Thomas C. Froehle, & Richard B. Leventhal

For a considerable time, practitioners using sociometric choice instruments have treated low peer acceptance as if it were the equivalent of peer rejection. This probably came about through a confusion of operational definition, (i.e., choice or non-choice in a sociometric procedure), with construct definition. It should be apparent that the meaning of low choice, operationally defined, is ambiguous from the standpoint of construct definition. One can be low chosen simply because he is not salient for or is little known to his peers. Yet another child may be low chosen but highly salient. In the latter case one might say that the child is rejected.

At this point one can see the inadequacy of using low sociometric choice to identify rejected children. The sociometric low chosens will consist of children who belong to the construct types "rejected" and "low chosen." The implications of being rejected are not identical to those of being low chosen. These two types of peer choice probably are linked to quite different behaviors on the part of the children who are so judged. The dyadic interactions that arise from them will have differing impacts on the respective types. Interventions designed to alter low sociometric choice will undoubtedly have divergent effects, as a function of the child's type, although an acceptance or choice type measure, as typically administered and analyzed, would not distinguish rejected from low chosen children.

The research literature, on the other hand, provides a clearer picture of the construct distinction between persons who are low chosen and those are are actively rejected. It refers to them as <u>isolates</u> and <u>rejectees</u>, respectively. But construct validity for these two distinctions has received little attention, since it is generally presumed that sociometric behavior is a direct reflection of what one wishes to measure (Remmers, 1963). When validity has been investigated, the concern has often been to establish concurrent or predictive validity rather than construct validity.

As a step toward establishing the construct validity of peer choice and peer rejection methods, as separate operational definitions, what is needed is a joint administration to a common sample, designed to test differential predictions. One attempt at this was that of Phillips (1966). His procedure involved administering to each child two parallel format instruments, one of which allowed choice and the other rejection. Separate scores were obtained for each. He found that children who are rejected are always low accepted, on the average, but that the reverse is not necessarily the case.

In a related study of child personality, the incidence of peer rejection versus that of low peer choice was found to be systematically and differentially related to the coping adequacy and activity level of children (Gotts, Adams & Phillips, 1969). Fourth grade children in the study were classified as high or low in interpersonal coping and high or low in activity on the basis of teacher-observed manifest behaviors. Both the high and the low active children who were low coping were low peer accepted. Likewise both

high interpersonally coping groups were high peer accepted. On peer rejection, however, the outcome was not a simple reversal of group means. The children who were both high in activity and low in coping were the most rejected, followed next, at a considerable mean distance by the low coping-low active children.

These results agree with the foregoing analysis of the fundamental differences between rejection and low acceptance. The rejectees appear to be highly salient, whereas the low accepteds may be viewed as little known or unobtrusive. Yet one may wonder about the efficiency of a method that requires elementary school children to engage in such a novel, school-alien activity as rejecting peers. Leventhal (1969) found, for example, in an investigation using both choice and rejection formats, that children had considerable difficulty utilizing the rejection format.

Blain and Ramirez (1968) have shown an alternate sociometric procedure that uses a free association method to obtain information regarding how peers are viewed. Among children having low meaningfulness (L-M) in an associative sense (Archer, 1960), they found sub-groups high discriminable (H-D) and low discriminable (L-D). Their findings led the present writer to conclude that the L-M, H-D children of their study resemble rejectees and that the L-M, L-D are like low accepteds or isolates. It may be possible, by the Blain-Ramirez method to clarify the meaning of these same subgroups while averting the disadvantages of the procedure that requires the recording by children of active rejection.

Yet a third method of distinguishing between these types can be derived from classical psychometric scaling procedures. One may contend from the two methods already discussed, that while low peer accepted children and peer rejected children have similar means on a sociometric choice instrument, children of these groups will have different variances. The rejected children should have smaller variances than do the low chosen.

In psychological scaling, a convenient method of integrating the mean and variance information for individual stimuli is to produce a set of scale values. If two stimuli have similar means but one has a smaller variance, the stimulus that is viewed more consistently (low variance) is more discriminable, and hence its scale value is more extreme. Under certain conditions, one may conclude that a stimulus having a large variance but a similar mean may not belong on the same dimension. Applied to the sociometric problem, one would infer that a child with a more extreme scale value (extreme mean, low variance) was a true peer rejectee, i.e., his peers concur more consensually on his extreme stimulus value, so they produce less variance for him. For the low accepted child, there will be less variance for him. For the low accepted child, there will be less consensus, and hence, high variance. In scale value terms, the rejected children should have values that are relatively discontinuous from those of their low accepted peers.

The advantage of the method advanced here is that it permits (1) a direct quantitative handling of the data (2) without requiring active rejection. The methods used by Phillips (1966) and Leventhal (1969) run into difficulty on the latter count. Blain and Ramirez's (1968) method is subject to a difficulty on the former count, since one must first reliably classify the free associations before he can begin to quantify his results.

Rationale for the Scaling Method. To conduct the scaling procedure optimally, one requires that each child be judged against every other child by all judges. A paired-comparison method would generate data of this kind. As the number (n) of stimuli increases to the n of children in a classroom, the number of comparisons which are necessary becomes prohibitively large. One can, next, anticipate serious problems for the intervals methods; e.g., with elementary school children, who are concretely operational in thought, it is not likely that one can communicate the rule-guided behavior that is required by the intervals methods. For a classroom-size peer group, the method of rank order appears inappropriate because the n of peers exceeds the immediate attentional capacity of the child.

Failing to find the foregoing traditional methods useable, one might use a method which presents to the child-judge, in a randomized order, a number of children that he can judge simultaneously. The immediate attention span of the child falls toward the lower end of the range, seven plus or minus two. Therefore one might set seven children as an upper limit to be judged in a group.

Suppose that each child is presented the name of his classmates in x groups of equal size y. For each group he is asked to select in succession the children whom he perfers with reference to some stated criterion, e.g., "as a friend." Suppose further, that each judge is asked to order a differently randomized set of the x groups, such that a child who is to be judged may appear in a group in combination with any other (y-1) children. Any judge will have compared each child for only one of the possible subsets of y children. On the average, however, each child will have been compared by n judges in n possible combinations of y child groups. The data generated in this fashion should, thus, approach those produced by one of the intervals methods. Furthermore, the usual canons of sampling are not applicable, inasmuch as the classroom represents the total population in question for most sociometric studies. It follows from this fact that one need not be as concerned about reducing the standard error of the mean via sampling as he is when inference must be made from a finite sample to a larger finite population, with a large risk of sampling bias.

One can check back if he wishes to determine whether a judge who made a group-discrepant judgment of an individual child has done so because he encountered that individual in an exceptional context, e.g., among (y-1) children who are clustered closely together above or below him in the overall order of group means. If this were the case, then the discrepancy might be downgraded in view of the context in which it appeared. Otherwise it would be taken as evidence that the child is not judged consensually.

A final problem to be handled in such scaling is what value to assign to the judge himself when one represents as a vector his choices for the other (n-1) children. This is a problem because to generate scale values every judge must have judged all n stimuli, himself included. Nevertheless, the child judge cannot reasonably be required to "choose himself." If one assumes that each child's estimate of his own sociometric rank is a function of the feedback that he receives from his (n-1) peers, and that his perception of the sociometric self is congruent with the feedback provided by his peers, then the best estimate of the rank he would assign to himself is the mean rank assigned him by his peers. This may be rounded to the nearest rank to conform to the ordinal property of ranks. Although the congruence assumption about self-judgments is not equally appropriate for all individuals, it is defensible on the average. For elementary school children the assumption is more tenable, because they are less defensive than are adolescents and adults, so are more likely to rank themselves in a way that is congruent with the peer feedback that they receive. One may further note that a mean rank assignment influences the variance equally for each case, so it does not bias the scale values.

Sociometric Consistency. Phillips' (1966) nomination method for peer choice and rejection did not permit a check of whether children use the two formats in a way congruent with the usual assumptions about sociometric behavior. Leventhal (1969), in contrast, had required each child to respond on a four point scale (from 1 = indifference to 4 = extreme amount of acceptance or rejection) to each child in his room with reference to both social acceptance and social rejection. These data permit one to analyze children's jointly occurring acceptance and rejection behaviors, to determine whether they are carried out consistently with the directions given them.

Procedure

Leventhal's (1969) data on fourth and fifth grade children were submitted to the foregoing kind of analysis. An acceptance by rejection matrix for each child operationally defined via frequencies of occurrence his consistent and inconsistent behaviors (Figure 1).

(Figure 1)

A contingency table was then constructed for each child to determine how consistently he behaved (Table 1).

(Table 1)

A Chi Square analysis of each child's contingency table established a probability level index of his consistency behavior. If a child's probability for consistent behavior equalled or surpassed .01, he was called consistent.

Additional data were obtained from the same sample, using the Thurstone scaling rationale detailed previously. Five to seven names of classmates, appearing on randomly assembled slips of paper, were bundled and distributed. Ss chose names from the bundle in succession as first choice, second choice,

and so forth "as a friend." Since the bundles distributed to each child had been randomly assembled, each child's name potentially appeared in a different peer context for each child who judged it. Thurstone scale values were then computed to represent the scaled position in class of each child. These scale values were then compared with the direct assignments made earlier in the peer acceptance-rejection procedure.

Results

Speaking first to the validity question, individual internal consistency checks revealed statistically that only 78 of 173 children used the acceptance and rejection methods in a logically consistent fashion. Even if the standards for judging a child's performance to be consistent are lowered from a probability for Chi Square of .01 to .05, with d.f. = 1, only 12 more children meet this. Furthermore, another 12 children behaved significantly in an inconsistent manner (p less than .05), by placing the bulk of their peer choices in the inconsistency region of the matrix. It seems resoundingly clear that the sociometric behavior of these preadolescents does not support the presumed validity of the sociometric method.

Consistency behavior was next examined in terms of grade level of Ss to further clarify the processes underlying acceptance-rejection responding. Only 30 of 80 fourth graders behaved consistently compared to 48 of 93 fifth graders (Table 2). A Chi Square analysis of these frequencies yielded a value of 3.235. The hypothesis that fifth graders would behave more consistently was supported, with a Chi Square value of 2.706 being required to support a directional hypothesis.

(Table 2 about here.)

A final analysis compared the Thurstone scale values with those from the acceptance-rejection method. In this analysis, results from social rejection and social acceptance were each transformed to standard scores for the 19 fourth graders and 20 fifth graders who were identified as low accepteds and true rejecteds, based on their scale values. Standard scores were used to combine Ss across classrooms. Then scores were converted to ranks, and Spearman-Rho correlation coefficients were calculated.

The correlation between rejection values and scale values for fourth graders was .41 (p less than .05) and for fifth graders, .61 (p less than .01). The corresponding relationships for acceptance values and scale values were -.19 (n.s.) for fourth graders and -.50 (p less than .05) for fifth graders.

Based on the distribution of the scale values for each classroom, only two and at maximum three true rejectees existed within each classroom. Comparing these to rejection method results showed a 67 percent correct identification rate. Correspondences to acceptance values were somewhat smaller than this, showing that scale values which were derived from ranked positive choices better represented rejection than acceptance. This offered some support to the rationale given for using scale values to predict rejection, particularly with the restricted range involved.

Discussion

One may conceptualize the validity problem of classroom sociometrics, as studied here, in terms of two principal scores of variation: 1) interpersonal ambivalence and the 2) cognitive-linguistic limitations of preadolescents. Support for the second hypothesis, which predicted poorer performance for fourth graders, may be viewed as favoring a cognitive-linguistic interpretation. If this finding were extended to older age groups, i.e., by demonstrating further increases in consistency behavior, then one source of variation would be accounted for.

The exact nature of the cognitive-linguistic limitation may best be expressed by pointing up the considerable difficulty still experienced by preadolescents in other testing situations. They cannot as readily tell what it means to disaffirm (or affirm) a socially desirable characteristic. Probably some substantial portion of the variance in sociometric inconsistency behavior could be dealt with in these terms.

Yet, after accounting for this, the present data provide little leverage for unravelling the second possible source of individual differences in inconsistency--interpersonal ambivalence. This is a matter to be recognized here, but largely is left to future investigations. We are currently undertaking such a study of our inconsistent Ss.

The scale values' relationships to peer acceptance and rejection offer some support to the earlier reasoning about the associative and discriminability components that underlie sociometric behavior. Nevertheless, the basic construct validity problem that was exposed in this study makes it seem unlikely that preadolescents can serve as Ss for testing whether peer acceptance scores or choice rankings can be transformed into adequate estimates of peer rejection. The scale value relationship constituted a major impetus to our study, but we have unearthed other questions which may be of even greater import.

Treatment. The need to distinguish social isolates from rejectees remains fundamental for educational practitioners. The existing literature strongly suggests that isolates and rejectees are differing types and that they are seen and treated differently by peers and teachers. We suspect from findings of the Gotts, Adams, and Phillips study (1969) that rejectees manifest a higher rate of problem behavior than do isolates; that they are actively rejected because of their negative stimulus value and their disruptive patterns of interpersonal behavior. For persons working with them, if this is true, initial efforts should be directed toward reducing the rate of problem behaviors. This interpretation would again be consistent with the Blain and Ramirez (1968) detection of discriminability to peers as an attribute of rejectees.

The plan for working with the isolate is indeed different in kind. Here one faces attenuated discriminability and low association value. The trick would seem to be to increase the more salient but socially acceptable

aspects of the isolate's behavior so they can be perceived and reinforced by his peers.

It may be that the rejectee however, will have somewhat in common with the isolate. Once we have reduced his problem behaviors, we have by definition left him somewhat devoid of the most discriminable aspects of his stimulus value for his peers. It seems that we may have to begin then to treat him as an isolate, after his problem behavior is gone. The rejectee may for this reason require a two-stage program, corresponding to 1) depressing problem behavior and 2) increasing socially rewarding behaviors.

The continuing problem, therefore, is one of appropriate construct measurement. We fear that the social rejection format may not only produce questionable data, but that it may be a reactive measure which, by asking for an active expression of rejection, may in fact increase the probability of rejection. But it is still unclear whether our efforts at indirect measurement of social rejection via social choice have given us the tool needed to make the kind of classification decisions which the above two-stage conception of rejectee treatment requires.

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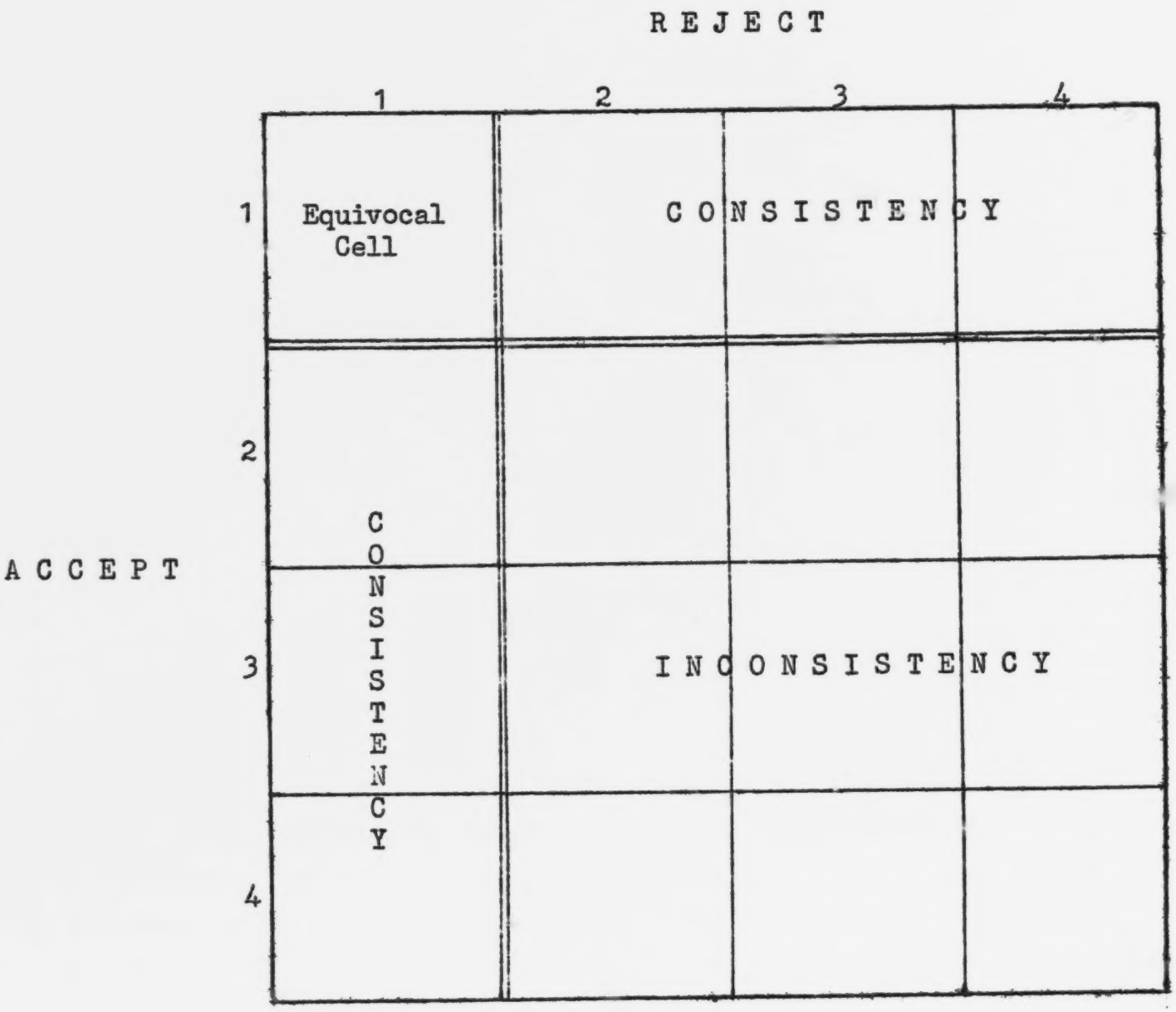

Fig. 1. Accept by Reject matrix for an individual child, depicting regions of behavioral consistency and inconsistency.

TABLE 1

CONSISTENCY-INCONSISTENCY CONTINGENCY TABLE

	OBSERVED	EXPECTED
CONSISTENCY	C	.4(N - 1 - m)
INCONSISTENCY	I	.6(N - 1 - m)

Where:

C = frequency of ratings found in cells labelled CONSISTENCY (Fig.1)

I = frequency of ratings found in cells labelled INCONSISTENCY (Fig.1)

N = size of classroom group

m = frequency of ratings found in cell labelled Equivocal Cell (Fig.1)

Rationale: Observations of m are equivocal with reference to the question of sociometric consistency behavior, hence are subtracted from available observations. An additional 1 is subtracted from N because S does not choose himself. N varies among classrooms; m further varies within a classroom among individuals.

With the equivocal observations (m) deleted, 15 cells remain in the Accept by Reject matrix (Fig.1). Of these, .6 fall within the INCONSISTENCY region, with the remaining .4 in the CONSISTENCY region.

TABLE 2

COMPARISON OF 4th AND 5th GRADE CONSISTENCY BEHAVIOR

	4th	5th	Totals
Consistent	30	48	78
Inconsistent	50	45	95
Totals	80	93	173

$\chi^2 = 3.235$, d.f. = 1, $p \leq .05$ (one-tailed test)